

APPLICATION

FOR

UNITED STATES LETTERS PATENT

**TITLE: MAGNETIC RETAINER FOR RETAINING
ARTICLES THEREON**

INVENTOR: HSUAN-SEN SHIAO

Express Mail No.: EL990137327US

Date: September 24, 2003

**TITLE: MAGNETIC RETAINER FOR RETAINING ARTICLES
THEREON**

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The present invention relates to a retainer, more particularly to a magnetic retainer for retaining articles thereon by magnetic attraction.

2. Description of the Related Art

10 A conventional magnetic retainer, as shown in Figure 1, generally includes a holding member 1 and an elongated magnetic bar 2. The holding member 1 includes a base plate 101 which is adapted to be mounted on a wall, and a magnet-holding part 102 disposed on and cooperating with the base plate 101 to define a magnet-retention groove 103 therebetween.
15 The magnetic bar 2 is mounted in the magnet-retention groove 103.

20 The conventional magnetic retainer is suitable specially for retaining long tools, such as spanner, screw drivers, files, etc., thereon, but retention of a variety of articles, like screws, bolts, nuts, etc., is not appropriate due to the elongated configuration of the holding member 1.

SUMMARY OF THE INVENTION

25 Therefore, the object of this invention is to provide a magnetic retainer which is capable of retaining a plurality of articles regardless of their

sizes and lengths so as to overcome the aforesaid disadvantage of the prior art.

According to the present invention, the magnetic retainer includes: a molded one-piece plastic mounting member including a bowl-shaped part and an
5 elongated part integrally formed with the bowl-shaped part, the bowl-shaped part including a base that has top and bottom faces, and a peripheral wall extending upwardly from the top face of the base to define a
10 receiving space therebetween, and having a top end face distal from the base, the base being formed with a plurality retaining holes, each of which is defined by a hole-confining wall, the elongated part projecting outwardly and laterally from the
15 peripheral wall, and having a top face and formed with an elongated groove which is defined by a groove-confining wall, the groove-confining wall having two opposite ends and being formed with two opposite shoulders that project respectively from the opposite
20 ends of the groove-confining wall into the groove; a plurality of magnets, each of which is fixed in a respective one of the retaining holes in the base; a metal sheet disposed within the receiving space and attached to the top face of the base through magnetic
25 attraction of the magnets; a covering disc attached securely to the bottom face of the base to cover the retaining holes so as to prevent removal of the magnets

from the retaining holes; a magnet-holding frame fitted in the elongated groove, seated on the shoulders, defining a holding groove, and having two opposite ends; and an elongated magnetic unit mounted
5 securely in the holding groove in the magnet-holding frame.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of this invention will become more apparent in the following detailed
10 description of the preferred embodiments of this invention, with reference to the accompanying drawings, in which:

Figure 1 is a partly sectional perspective view of a conventional magnetic retainer for retaining
15 articles thereon;

Figure 2 is an exploded perspective view of the preferred embodiment of a magnetic retainer according to the present invention for retaining articles thereon;

20 Figure 3 is a schematic sectional view of the preferred embodiment; and

Figure 4 is a front view to illustrate the preferred embodiment in a state of use.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

25 Referring to Figures 2 and 3, the preferred embodiment of a magnetic retainer according to the present invention is shown to include a molded

one-piece plastic mounting member 10, a plurality of annular magnets 20 (only one is shown in Fig. 2), a metal sheet 22, a covering disc 40, a U-shaped magnet-holding frame 33, an elongated magnetic unit 30, and an adhesive tape 34.

As illustrated, the mounting member 10 includes a bowl-shaped part 12 and an elongated part 13 integrally formed with the bowl-shaped part 12. The bowl-shaped part 12 includes a base 11 that has top and bottom faces 111, 112, and a peripheral wall 14 that extends upwardly from the top face 111 of the base 11 to define a receiving space therebetween, and that has a top end face 121 in the form of a flange. The base 11 is formed with a plurality retaining holes 113, each of which is defined by a hole-confining wall (113W). The elongated part 13 projects outwardly and laterally from the peripheral wall 14, and has a top face 131 that is disposed at an elevation higher than the top end face 121 of the peripheral wall 14. The top face 131 of the elongated part 13 is formed with an elongated groove 130 which is defined by a groove-confining wall (130W). The groove-confining wall (130W) has two opposite ends 133, and is formed with two opposite shoulders 132 that project respectively from the opposite ends 133 of the groove-confining wall (130W) into the groove 130.

Each of the annular magnets 20 is press-fitted in

a respective one of the retaining holes 113 in the base 11, and engages frictionally the hole-confining wall (113W) that defines the respective one of the retaining holes 113.

5 The metal sheet 22 is disposed within the receiving space of the mounting member 10, and is attached to the top face 111 of the base 11 through magnetic attraction of the annular magnets 20.

10 The covering disc 40 is attached securely to the bottom face 112 of the base 11 to cover the retaining holes 113 so as to prevent removal of the annular magnets 20 from the retaining holes 113 in the base 11.

15 The magnet-holding frame 33 is fitted snugly in the elongated groove 130, is seated on the shoulders 132 of the groove-confining wall (130W), defines a holding groove 330, and has two opposite ends.

20 The elongated magnetic unit 30 is mounted securely in the holding groove 330 in the magnet-holding frame 33, and has a top face flush with the top face 131 of the elongated part 13. In the preferred embodiment, the elongated magnetic unit 30 is formed by four separate magnetic bar pieces 32.

25 The adhesive tape 34 is attached adhesively to the top face of the magnetic unit 30, and to the opposite ends of the magnet-holding frame 33.

Referring to Figure 4, during use, the bowl-shaped

part 12 can be mounted on a magnetically attractive wall, such as a car body, or on a concrete wall through a mounting hole formed in the top end face 121 of the peripheral wall 14. Small articles, such as screws, driving bits, washers and nuts, can be retained in the receiving space of the bowl-shaped part 12 by virtue of magnetic attraction, while long tools, such as screwdrivers, spanners, files, etc., can be retained on the elongated part 13 by virtue of the magnetic unit 30.

Since the magnetic retainer of the present invention can retain magnetically a variety of articles regardless of their lengths and sizes, the aforesaid disadvantage of the prior art can be overcome, accordingly.

With this invention thus explained, it is apparent that numerous modifications and variations can be made without departing from the scope and spirit of this invention. It is therefore intended that the invention be limited only as indicated in the appended claims.